"*Las Junta, Col., July* 29.

"Good observations of the eclipse at Las Junta. Complete set of photographs. "ASAPH HALL"

"*Creton, W.T., July* 29

"Sky cloudless and observations perfectly successful. Six photographs of corona. Four polariscope photographs of corona and a fine drawing obtained. No ultra violet spectrum visible during totality.

"W. HARKNESS"

"*Central City, Col., July* 29

"Whole eclipse perfectly observed. I find no Vulcan as large as sixth magnitude. Hastings finds consistent tangential polarisation. Drawings and photographs of corona. Diffraction shade bands observed.

"E. J. HOLDEN"

"*Separation, W.T., July* 29

"Observations here very successful. Saw wings of light, supposed to be zodiacal light, extending 6° on each side of the moon in the direction of the ecliptic. Commander Sampson, U.S.N., found no dark lines in continuous spectrum of corona. Line 1,474 seen near sun's limb. No bright lines visible a few seconds after totality.

"S. NEWCOMB"

"*Pike's Peak, Col., July* 29

"Fair weather after a week's storm. Observations successful in a marvellously clear sky. Corona resembling zodiacal light followed in one direction twelve diameters from the sun. "S. P. LANGLEY."

"Eclipse successfully observed at Dallas, Texas. All four contacts satisfactory. No inter-Mercurial planet seen with comet-seeker. Thin clouds. No stars seen near the sun. Corona very brilliant. Several drawings secured and photographs taken. "D. P. TODD"

It is telegraphed to the *Tribune* from—

"*Havana*, July 30.—Yesterday the total eclipse of the sun was visible in this latitude. The sky was perfectly clear, and complete observations were made. A report of the results obtained was expected to-day, but the scientific commission which took observations at Mariel, where the meridian passes, has not returned yet."

"*Quebec*, July 30.—The eclipse of the sun yesterday was witnessed under the most favourable circumstances."

"*Washington*, July 30.—The Signal Service Observer at Virginia City, Mont., reports to the Chief Signal Officer as follows:—'Our four telescopic stations have got all the contacts nicely, and three sketches of the corona.'"

OUR ASTRONOMICAL COLUMN

THE SATURNIAN SATELLITE HYPERION.—The following ephemeris of Hyperion is deduced from the elements which were calculated by Prof. Asaph Hall, upon his observations in 1875 with the Washington 26-inch refractor.

AT GREENWICH MIDNIGHT.

	Position.	Distance.		Position.	Distance.
	°	″		°	″
Aug. 24	268	147	Sept. 4	89	125
,, 25	263	93	,, 5	82	53
,, 26	243	37	,, 6	301	30
,, 27	125	36	,, 7	281	99
,, 28	105	93	,, 8	277	167
,, 29	100	146	,, 9	276	213
,, 30	97	189	,, 10	274	239
,, 31	96	218	,, 11	273	244
Sept. 1	94	228	,, 12	272	231
,, 2	93	216	,, 13	271	201
,, 3	92	181	,, 14	269	158

The plane of the orbit of the satellite is assumed to coincide with that of the ring, and as the earth has passed through the plane since the period included by the ephemerides which appeared in this column last year, the apparent motion of the satellite is now reversed, or the angles of position diminish. The above ephemeris includes an entire revolution of the satellite, and will serve, if necessary, to afford an idea of its position at any time during the present opposition, remarking that the satellite will be at its peri-saturnium at the following times: August 15·0939, September 5·4052, September 26·7165, October 18·0278, and November 8·3391.

OLBERS' STAR NEAR γ PEGASI.—On September 27, 1820, Olbers remarked a star of 6·7 m. not entered upon Harding's map, and which Harding had not seen during two comparisons of it with the heavens. It was somewhat brighter than 39 and nearly equal to 40 Piscium. Olbers accounted for it not having been observed on the meridian by the fact of its culminating within a few seconds of γ Pegasi. He watched it during the remainder of the season without noticing any change in brightness, and it was from the circumstance of his attention being thus directed to this quarter of the sky that he made an independent discovery of the comet of 1821. The star is in the *Durchmusterung* as 7·5 m., and was observed once by Argelander (October 24, 1861), the resulting position for 1855·0 being R.A. 0h. 5m. 41·8s., N.P.D. 73° 52′ 56″. Bessel did not observe it, but it is suspicious that he has a star 9m. only, preceding Argelander's position of Olbers' star 7·0s. and 3′ 58″ to the north, where the *Durchmusterung* has no star. It is a case for some one of those observers who are occupied with the variable stars to explain.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.*]

A New Mineral

MR. BARNETT, of Chyandour, near Penzance, sent to the British Museum some time ago a mineral which appears to be new.

It is white with a slight tint of blue or greenish blue, and occurs as a layer sometimes of a quarter of an inch thickness, generally of a uniform fibrous structure, lining hollows or encasing quartz and other minerals. It is associated with earthy chlorite and quartz; iron pyrites, some copper pyrites, and mispickel being disseminated in the lode-material. Scorodite in bosslike aggregations also occurs with it, and in at least one instance the interior of the bosses of scorodite is filled with the mineral in question.

Dr. Flight has analysed it, and, though the mode in which the water is present has to be established more certainly, the general result of the analysis may be stated to be the assigning to the mineral a formula expressed, in "old style," as

$$3R_2O_3,\ As_2O_5 + 16H_2O,$$

R_2O_3 representing alumina with a notable amount of ferric oxide. The tint seems due to about one per cent. of copper, and a small amount of a sulphate is also present. The presence of the sulphate and general character of the composition would lead one to place the mineral with Pitticite, or "iron-sinter." But the formula, as Dr. Flight has pointed out, is so nearly that of an arsenical (instead of a phosphatic) Evansite that the true place of the mineral seems to be near the Evansite of David Forbes. I propose to call it Liskeardite, and to describe it more precisely hereafter. N. S. MASKELYNE

British Museum, Mineral Department,
August 12

The Colouring of Birds' Eggs

WITHIN the last few months several notices have appeared in both England and Germany of supposed newly-discovered

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colouring matters in the shells of birds' eggs. Permit me to call attention, through your journal, to a long and detailed paper on this subject published by me, about four years ago, in the *Proceedings* of the Zoological Society of London. Apparently the authors who have lately treated on this subject have not been aware of the existence of this paper. As far as they go, the facts they have described fully confirm my conclusions; but, as I have shown, different birds' eggs contain at least five perfectly distinct coloured substances, and not, as Liebermann says, only two. One of these is closely related to a product of the decomposition of hæmoglobin and another to the bile pigments, it and the bile of birds yielding the same well-marked product on oxidisation. H. C. SORBY

Kingstown, Dublin, August 6

The Limbs

IN his interesting papers on "The Genesis of the Limbs," which have recently appeared in NATURE, Mr. Mivart mentions that I have represented the limbs as modified portions of a primitively continuous inferior azygos fin.

That view was stated by me at length in a paper in the *Journal of Anatomy and Physiology*, 1871, vol. v., p. 59. It was formed from the following considerations among others—First, that the mesial, or azygos fins, are essentially double organs, being formed from the coalesced elements of the dorsal and ventral plates of the two sides, and being furnished with muscles, nerves, and blood-vessels, from the two sides. They may therefore be the representatives of organs which remain double, that is, of organs in which the lateral elements do not coalesce. Secondly, the limbs and the azygos fins do not co-exist in the same region. The limbs are formed where the ventral plates are kept apart and expanded by the presence of the visceral cavity, so that the elements which in the dorsal and postanal regions meet and unite into azygos fins, are here separated and grow out as lateral limbs. The ventral plates are, moreover, continued onwards beyond the outgrowing line of the limbs, and form the median portion of the visceral wall which lies beneath and between the limbs on the two sides. Thirdly, there is such a marked resemblance between the ventral fins in some fishes and the anal fins, that the transition from the one to the other is easy; the dagger-shaped pelvic bones being the representatives of two or more coalesced intraspinous bones and the ray bones of the one set being, in like manner, the representatives of the ray bones of the other.

Mr. Balfour in his admirable papers on "The Development of Elasmobranch Fishes," in the *Journal of Anatomy and Physiology* shows (vol. xi. p. 133), that the limbs are the remnants of continuous lateral fins, and that the ridges from which they are developed are in every way like the folds from which the unpaired fins are formed, but the development and growth are confined to two special points on each side instead of being continued, as in the case of the dorsal and anal fins, along a greater length of the fold. He further remarks that, externally, they closely resemble the unpaired fins, and both their position and nervous supply indicate that they do not belong to one special segment of the body. The lateral ridges, from which they are developed, I conceive to be the continuations of the diverging lateral halves of the essentially double ridge of the caudal fin kept asunder by the presence of the visceral cavity. These are but little separated in the position of the ventral fins, and are more so in the position of the pectoral fins. If this be so, the limbs are specialised differentiations of primitively continuous lateral folds—of portions, that is, of the diverging plates of the median fold from which the caudal fin is developed.

I cannot, however, assent to Mr. Mivart's view that the limbs are mere appendages to the axial system, or admit that either they or the limb girdles are the result of centripetal growth, "due to the in growth of originally superficial structures—exoskeletal hardenings which have grown inwards and become endoskeletal." The limb girdles are found in the same plane of the mesoblast as the ribs, and are, as I have shown in the "Anatomy of the Cryptobranch" (*Journal of Anatomy*, vol. vi. p. 9, and *Observations on Myology*), though not necessarily the serial homologues of the ribs, yet like them the result of ossification in the ventral transverse intermuscular septa. As they grow out they carry before them envelopes not only of skin, but of muscle, derived from the body-wall, which become differentiated according to the requirements. Moreover, although the ridges from which they are primarily developed may appear at first as epiblastic projections, these are soon supplemented by accumulations of mesoblastic tissue in which the components of the limbs are chiefly formed. G. M. HUMPHRY

Cambridge, August 1

The Darkness of Caverns

THE impenetrable darkness of caverns has been for a very long time a recognised fact, without its cause having been satisfactorily explained. This darkness vanishes but partially before torch-light, and that only in a very limited radius. I, in my explorations in the caverns of Spain, had also noticed this circumstance, and now that I have verified it in others in Switzerland, I venture to think that I have found the explanation of this phenomenon.

The walls as well as the roof and floor of caverns are continually covered with moisture, which works without interruption in condensing the corpuscles that float in that circumscribed space. It thus performs the same function that the glycerine does which varnishes the sides of the crystal box by means of which Prof. Tyndall obtains an optical vacuum, the light diffusing itself imperfectly from want of those atoms which act as reflecting bodies. I have had occasion to verify my supposition by scattering around the torch very fine dust of different substances. The brightness diffused itself regularly all the time that the dust maintained itself in the required state of closeness and fluctuation, and vanished again slowly as the dust spread or deposited itself. The earth or common dust is the one which, in my experience, has produced the best effect.

SALVADOR CALDERON

Scent and Colour in Flowers

THE extension of our perceptive faculties of sight and hearing by various optical and acoustical instruments may enable us to comprehend the possibility of these faculties existing in other creatures to a degree so far surpassing ours as to seem a difference almost of kind. So the sight of the vulture would seem to be paralleled by the faculty of smell in moths, as evidenced by the detection of distant females by males. It would seem probable that the sense of smell may guide insects at a far greater distance than that of vision; for a consideration of the structure of the eyes of insects leads to the belief that they are not capable of forming clear images of distant objects. While, then, the scent of its blossoms may attract insects to a plant, their colour will act as a subsequent guide to the individual flowers, just as variegations undoubtedly act as honey-guides when the insect reaches the flower. This view is borne out, firstly, by the undoubted connection between perfume and pollination, shown by Morren in the case of the orchid *Maxillaria*, whose aromatic perfume lasts till pollination; and, secondly, by the well known connection of odour both with colour and with natural groups, white flowers being mostly sweet-scented, brown and orange ones most fetid. The insect could thus identify species before seeing them. Mr. Wallace has been, perhaps justly, blamed by a writer in the *Gardener's Chronicle* for saying that brightly-coloured flowers are seldom scented, and Dr. Taylor by "J. S. G." (NATURE, vol. xviii. p. 277), for saying that white flowers open mostly at night. It would, I think, be truer to say that few flowers are both variegated and scented, *i.e.*, that scented flowers are mostly monochromous, and that the majority of night-blowing flowers are white. The latter is a very different matter from saying that the majority of white flowers are night-blowing. We can perceive with difficulty that one part of a flower is more scented than another, yet scent may replace the dots and point-indicating lines of variegation to the senses of an insect. Nature not only often effects one purpose by divers means, but also uses one means for divers ends; so just as colour exists in plants, not only to attract insects, we can understand it being absent in some white flowers simply as a phenomenon of degradation and not as one of specialisation. The dog-rose, white convolvulus, and daisy, mentioned by Mr. Gardner as closing at eventide, are all scentless. The first, according to Dr. Hermann Müller, is visited by six hymenoptera, two diptera, and twelve coleoptera. The convolvulus does not close till between eight and ten P.M., and re-opens by moonlight. It is visited by two diptera, *Podura, Thrips*, one coleopteron, two hymenoptera, and the *Sphinx con-*

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